



## INTER-OFFICE CORRESPONDENCE

3. oct NT  
ORIGINATING OFFICE Westport

TO (LOCATION) Westport

FROM R. M. Naley


DATE 10/2/72

ATTENTION J. P. Madden

SUBJECT

COPY TO

A. Blackwell  
R. E. Crow  
E. S. Hays ✓  
C. S. Kent  
W. L. Taylor  
L. H. Wittenberg



As a result of Cabot's recent decision not to support our pollution abatement program, you asked me to estimate the approximate cost and quantity of additional  $ZrCl_4$  we could produce at Niagara Falls for stockpiling by  $ZrCl_4$  customers.

In January 1972 we conducted a 36,000 lbs.  $ZrCN$  feed enrichment plant trial. The results were inconclusive, and there are varying opinions on the estimated cost of enrichment. The Niagara Falls plant has purchased and received an additional 50,000 lbs. of  $ZrCN$  which could be used for an additional plant trial. My estimate of additional cost to Stauffer would be 8 to 10¢/lb. of  $ZrCl_4$ ; therefore, to maintain the same profitability of operations a price of  $ZrCl_4$  (FOB Niagara Falls) of 20.5 to 22.5¢/lb. should be considered. I believe that Amax's alternative is to produce  $ZrCl_4$  by shaft furnace chlorination of  $ZrCN$ . (Our previous experience at Niagara Falls indicates that the raw material cost alone for shaft furnace chlorination of  $ZrCN$  would be 26¢/lb., therefore our enrichment price might be acceptable to Amax). The 50,000 lbs. of  $ZrCN$  should produce an additional 100,000 lbs. of  $ZrCl_4$ .

For a long term production situation the cost of enrichment would be based on the plant's chlorine efficiency and the increased raw material costs per pound of output.

Our ability to produce large quantities using enrichment will depend on:

- 1) chlorine efficiency
- 2) chlorine flow rate
- 3) production equipment on stream time
- 4)  $ZrCN$  availability
- 5) other customer requirements
- 6) customers ability to stockpile material

The ability to secure enrichment feed appears to be our limiting factor. TAM would supply our ZrCN and they have asked for a take or pay contract for 1,000 tons over a year period. If this figure is based on their capacity, we would get 83 tons/mo. and could therefore produce between 2 to 300,000 lbs. of additional  $\text{ZrCl}_4$ /mo. The take or pay aspects of a contract could alter our costs (see attached TAM letter of 3/16/72 to H. Erichs). Also, there is a 4-6 week lead time which means we could not start continuous enrichment for some time.

If we were able to get as much enrichment feed as we wanted, I believe we could produce approximately 4 to 600,000 lbs/mo. additional  $\text{ZrCl}_4$  and still meet  $\text{SiCl}_4$  customer expected requirements. (I am assuming that we must supply Cabot their minimum average monthly commitments (2.3 million lbs/mo.), and that we would build a stock for Weston at 300,000 lbs./mo. of  $\text{SiCl}_4$ ).

Distribution of capacity over the remaining months of production could have legal implications, therefore I have briefly discussed this with C. Kent.

If we distribute  $\text{ZrCl}_4$  based on historical sales, we must charge both Wah Chang and Amax enrichment costs in order to recover our money. However, it might be possible to consider enrichment a development project and supply Amax all the enrichment product for their financial support of the project. Another possibility may be able to toll ZrCN for Amax without involving Wah Chang.

If Amax is interested in receiving enriched material, I believe we should conduct a second plant trial as soon as possible to verify the economics of enrichment. Since there are many factors which will affect the volume of enriched product we can produce, I do not believe we should commit to a specific volume. Also, if Amax wishes to pursue enrichment our Purchasing Department should clarify our ZrCN supply position and costs.

  
R. M. Naley

RMN;js



## TAM DIVISION

DAVID L. RIST  
Manager of Sales

March 16, 1972

Mr. Hal Erichs  
Stauffer Chemical Co.  
299 Park Avenue  
New York, New York 10017

Dear Mr. Erichs:

As per your request, we are pleased to quote the following for Zirconium Cyanonitride and Bubbled Zirconia.

1. Zirconium Cyanonitride 1000 ton non-cancellable contract covering a 12 month period. Contract cancellation penalty \$20,000.00.

Price: \$0.45 per pound f.o.b. our plant  
Package: 3500 lb. Tote Boxes

Shipment to begin 4 to 6 weeks from receipt of contract.

2. Zirconium Cyanonitride non-contract price

Truckload Price: \$0.47 per pound f.o.b. our plant  
Package: 3500 lb. Tote Boxes

3. Bubbled Zirconia 1000 ton non-cancellable contract covering a 12 month period. Contract cancellation penalty \$18,000.00.

Price: \$0.30 per pound f.o.b. our plant  
Package: 3500 lb. Tote Boxes

Shipments to begin 4 to 6 weeks from receipt of contract.

RECEIVED

MAR 20 1972

PURCHASING SMC-7890779

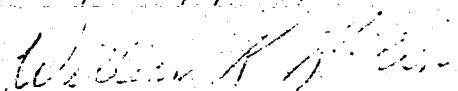
4. Bubbled Zirconia non-contract price

Truckload Price: \$0.35 per pound f.o.b. our plant  
Package: 3500 lb. Tote Boxes

As to material sizing, we are quoting on 1/4 inch and down for the Bubbled Zirconia. We will crush the Bubbled Zirconia with no additional charge if you place a 1000 ton contract for this material. The Zirconium Cyanonitride will be 14 mesh X down.

If I can be of any further service, please feel free to contact me at anytime.

Very truly yours,



William K. Kolln

WKK/hb